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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 905,693	11 14 2000	Robert A. Gonsalves	RG-2	5886

7590 06 02 2003
Richard Menelly
18 Saco Rd
Alfred, ME 04002

EXAMINER

LEE, PATRICK J

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 06 02 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/905.693

Applicant(s)

GONSALVES, ROBERT A.

Examiner

Patrick J. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) 1-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 14 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1 ☐ Certified copies of the priority documents have been received.

- 2 ☐ Certified copies of the priority documents have been received in Application No. _____.
- 3 ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

DETAILED ACTION

Specification

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner has cited the references on form PTO-892, they have not been considered.

Claim Objections

2. Claims 1-6 are objected to because of the following informalities: The claims should start on a separate page. Appropriate correction is required.

3. Claim 2 is objected to because of the following informalities: In line 1 of claim 2, "Figure 1" should read "Claim 1" in order to make a proper reference to the parent claim. Appropriate correction is required.

4. Claims 2 & 5 are objected to because of the following informalities: Currently, claims 2 & 5 have multiple periods when they should consist of only one sentence. Appropriate correction is required.

5. ~~Claim 5 is objected to because of the following informalities: In line 12 of claim 5 on page 13, "w1" should read "W1". Appropriate correction is required.~~

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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7. Claims 2-3 & 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 2-3 & 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: With respect to claims 2 & 5, the basis of the setting of $T(k+1)$ equal to $-W1(k)$ should be explained. Also in claim 2, the terms $Q(k)$ and $W1(k)$ should be explained as to what they represent. As a result, dependent claims 3 & 6 are also rejected.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language

10. Claims 1 & 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Love et al 6,107,617.

With respect to claims 1 & 4, Love et al disclose an optical correction system for use in telescopes. The system comprises of a telescope (2) that receives images from an object scene (1), a liquid crystal spatial light modulator (LC SLM) (4) and its

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corresponding driver (10), a CCD camera as a detector array, and a data processor as a sequential diversity processor. LC SLM (4) is illustrated to be within optical proximity to a lens and reflecting elements that make up the telescope (2). A CCD camera as a detector array receives images from the LC SLM (4) and sends those images as electronic signals to a data processor as a part of computer (8) (see column 3 lines 43-44). The data processor calculates aberration estimates and sends a signal to controller driver (10), which then controls LC SLM (4) in order to correct the beam (see column 4, lines 1-6).

11. Claims 1 & 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Wirth et al 5,146,073.

Wirth et al disclose an optical system that is capable of correcting for image distortions. The system comprises of: a lens (105) and aperture (110) for allowing images to be received from a turbulent atmosphere; a deformable mirror (200) as an adaptive optic for correcting for wavefront distortions (see column 2, lines 32-35); sensor array (172') to receive adapted images from deformable mirror (200) and to send a signal to mirror control unit (330); and mirror control unit as a sequential diversity processor connected to both the sensor array (172') and deformable mirror (200) to provide sequential control signals to correct for aberrations.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title if the differences between the subject matter sought to be patented and

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 2-3 & 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Love et al 6,107,617.

With respect to claims 2 & 5, Love et al disclose the system as described in the discussion of claims 1 & 4. While Love et al does not disclose the processor system calculating the listed equations, such arithmetic calculations are known and would have been obvious to program into the processor. Modifying Love et al accordingly would have allowed for accurate control of the adaptive optic in order to compensate for errors or aberrations within the wavefront.

With respect to claims 3 & 6, Love et al do not explicitly disclose equation (7), but such would have been obvious to be derived as it only requires the addition of the term $T(k-1)$ on both sides of equation (2) stated in claims 2 & 5. Changing the equation as such would have allowed the calculation of the phase applied to the adaptive optic at $t=k$.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gonsalves et al 4,309,602 teach an adaptive optic sensor for wavefront sensing.

Graves et al 6,452,145 teach a method and apparatus for wavefront sensing.

Burns et al 6,486,943 teach a method and apparatus for correction of an optical aberration.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (703) 305-3871. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9558 for regular communications and (703) 306-5511 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Patrick J. Lee
Examiner
Art Unit 2878

PJL

May 28, 2003


DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800